

Remarks

Reconsideration of this Application is respectfully requested. Claims 1-5 and 7-9 are pending in the application, with claim 1 being the independent claim. Claim 6 has been previously cancelled without prejudice to or disclaimer of the subject matter therein.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejection under 35 U.S.C. § 103

Claims 1-5 and 7-9 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over WO 02/16304 to Müh *et al.* ("Müh"). The Examiner asserts that the present invention differs from Müh "in that the claimed reaction pressure range is 1200 mbar which is slightly different from the prior art pressure....[T]he prior art process is conducted in the range of from 1.3 bar to 4 bar, whereas the claimed pressure range is from 800 mbar (0.8 bar) to 1200 mbar (1.2 bar)." Office action, pages 4-5. The Examiner further asserts:

The claimed ranges and the prior art do not overlap but are close enough that one skilled artisan in the art would have expected them to have the similar reaction conditions in the absence of an unexpected result. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to optimize the prior process by controlling the pressure by routine experimentation.

Office action, page 5.

Applicants respectfully disagree and traverse. It would not have been obvious to optimize the process of the Müh reference to achieve the claimed pressure range since Müh clearly requires the reaction to occur under increased pressure to achieve comparable reaction times. The claimed method achieves short reaction times of 15 hours at a pressure range of 800 to 1200 mbar, i.e., 0.8 to 1.2 bar. This is significant because the claimed method achieves high yields without conducting the reaction at above-normal pressure. Müh, on the other hand, specifically discloses that high yields are accomplished by conducting a reaction under high pressure. The complete disclosure of Müh is focused on reactions which are carried out under increased pressure, which requires equipment to ensure that an above-normal pressure is maintained during the reaction time, and would also require special technical safety measures. See page 1, lines 12-14 of the present application. This makes such a method unsuitable for industrial use. Since the present method is not conducted at above-normal pressure to achieve comparable reaction times, it does not have the disadvantages of the Müh method.

As pointed out in Applicant's Reply of July 27, 2009:

While the Müh specification generally discloses elevated pressures ranging from 1.3 to 9 bar (see page 2, line 10 of the translated version of Müh), the reactions of Examples 1 and 2 of Müh pages 7 and 8 of Müh are carried out in closed reaction vessels at a high pressure, nearer the upper limit of this pressure range. At first, the starting materials to be used in the reactions are filled within the reaction vessel at room temperature and then the reaction mixture is heated to a temperature of 105°C (in both examples). Due to this increase in temperature, the pressure inside of the reaction vessel will be very high, nearer the upper limit of the pressure range mentioned in the general part of the specification than the lower limit pressure range mentioned in the general part of the specification than the lower limit. Thus, the examples of Müh that disclose that a short reaction time (of 12 hours) involve reactions carried out at a pressure which is *significantly higher* as compared with

the claimed range of 800 to 1200 mbar. There is no disclosure in Müh that a comparable short reaction time can be achieved at lower pressures.

Applicant's Reply of July 27, 2009, page 7.

In further support of the foregoing statements, submitted herewith is a Second Declaration of Andreas Guenther under 37 C.F.R. § 1.132 ("the Second Declaration"), which includes Exhibits A, B and C relating to experiments conducted under the method described in the Müh reference. The experiments described in the Second Declaration and supported by the Exhibits A, B and C attached thereto show that the Müh method requires a reaction pressure about 5 times higher than the claimed method in order to achieve a comparable short reaction time of 12 hours. As provided in the Second Declaration, it is Dr. Guenther's opinion that one of skill in the art, attempting to achieve a short reaction time for preparing dialkyl alpha-fluoromalonates, would not have been led by the teachings of the Müh reference to reduce the pressure to normal pressure since the method of Müh reference clearly requires the reaction to be conducted under increased pressure, and further requires such increased pressure to be significantly higher than normal pressure, at almost 6 bar and higher, to achieve the short reaction time of 12 hours.

In particular, the Second Declaration describes a record (Exhibit A) dated May 23, 2000, of a protocol of an experiment carried out under the supervision of Dr. Müh that corresponds to Example 1 described in the Müh reference, a record (Exhibit B) dated July 21, 2000, of a general description of the method used in the Examples 1 and 2 of the Müh reference, and a record (Exhibit C) dated October 30, 2000, of an internal order for an experiment that corresponds to Example 2 described in the Müh reference. Exhibit B

confirms that the experiment protocols corresponding to Examples 1 and 2 of the Müh method require a sealed pressure-resistant reaction vessel with a reaction time at 105°C of 12 hours. The experiment of Exhibit A yielded approximately 85% of fluoromalonic ester product using 3 equivalents of reactants (triethylamine and hydrogen fluoride) per equivalent diethyl chloromalonate, and the reaction time was 12 hours at an inherent pressure of just under 6 bar. Accordingly, the experiment of Exhibit A shows that, under the method described in Example 1 of the Müh reference, for the documented reaction temperature of about 105°C and the reaction time of 12 hours, the reaction pressure was just under 6 bar. Exhibit C includes a two page attachment of time, temperature and pressure data monitored during the experiment corresponding to Example 2 described in the Müh reference in which 2 equivalents of reactants (triethylamine and hydrogen fluoride) per equivalent diethyl chloromalonate were used. This data shows for the documented reaction temperature of about 105°C and the reaction time of 12 hours, the reaction pressure ranged from 3.5 bar to 6.9 bar.

In comparison to the experiments of Exhibits A and C corresponding to the Müh method, Example 1 of the present application shows that for the reaction temperature of 105 to 110°C under normal pressure (800 to 1200 mbar), the reaction time is 15 hours. Thus, the Müh method requires a reaction pressure about 5 times higher than that of the present application in order to achieve a comparable short reaction time of 12 hours. The claimed method therefore provides the unexpected advantage of a comparable short reaction time without the use of high pressure as required by the Müh method. *See* M.P.E.P. § 716.02(a)-(d) and cases cited therein.

Moreover, the Examiner's assertion that the above-normal pressure range of 1.3 to 4 bar of the Müh reference would have been expected to have similar reaction conditions as at normal pressure is unsupported. The Müh reference clearly requires a reaction pressure about 5 times higher than normal pressure to achieve a reaction time of 12 hours. There is no disclosure in Müh that a comparable short reaction time can be achieved at lower pressures. Accordingly, one of skill in the art, attempting to achieve a short reaction time, would not have been led by the teachings of the Müh reference to reduce the reaction pressure with an expectation of similar reaction conditions.

In addition, as stated in paragraph 14 of the Second Declaration, U.S. Patent No. 5,391,811 to Bohm et al. ("Bohm") describes a method carried out under normal pressure in which the reaction time is 72 hours, and in light of the long reaction time described in the Bohm reference, it is Dr. Guenther's opinion that one of skill in the art would not have been led to reduce the pressure of the method of the Müh reference to normal pressure to achieve a short reaction time. *See* M.P.E.P. § 716.01(c) and cases cited therein.

For at least the foregoing reasons, Applicants submit that claim 1, and claims 2-5 and 7-9 which depend from claim 1, are non-obvious over the Müh patent and request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

Other Matters

The Examiner indicates that a certified copy of the foreign priority document DE 10337885.5 is not in the file. Applicants submit herewith a Request to Retrieve Electronic Priority Applications(s) (Form PTO/SB/38), in order for the USPTO to

retrieve an electronic copy of the foreign priority document DE 10337885.5 from the EPO. Applicants respectfully request the Examiner to acknowledge receipt of the foreign priority document once it appears in the Electronic File Wrapper.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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